



International Space Station Emergency Procedures Book

ISS-Expedition 1

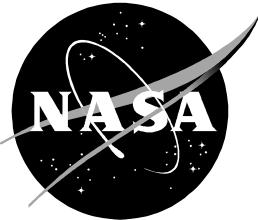
Mission Operations Directorate
Operations Division

Preliminary
March 11, 1998

These procedures are available
electronically on the SODF Homepage
at <http://fitproc.jsc.nasa.gov>

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



**INTERNATIONAL SPACE STATION
EMERGENCY PROCEDURES BOOK
ISS-EXPEDITION 1**

PRELIMINARY
March 11, 1998

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This document is not currently under the configuration control of the Systems Operations Data File Control Board (SODFCB). During the interim, changes may be submitted to the book manager.

ACKNOWLEDGEMENTS

Editorial Standards Review

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The SODF procedures listed here are for the use of the Expedition 1 crew. By final publication, all applicable Increment 1 procedures will be included in this list. The current list of procedures is for use from 2R docking to 5A docking based on Rev C Assembly Sequence.

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SSU 4B(2B) OVERTEMP SAFING FAILED-P6	TBD
SSU 4B(2B) TRIP-P6.....	TBD

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WARNING MESSAGES

WARNING MESSAGE TABLE..... 1-3

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WARNING MESSAGE TABLE

Message Text	Condition	Action
Batt 2B11 Temp Out of Range Safing Failed-P6	TBD	TBD
Batt 2B11 Undervoltage Safing Failed-P6	TBD	TBD
Batt 2B12 Temp Out of Range Safing Failed-P6	TBD	TBD
Batt 2B12 Undervoltage Safing Failed-P6	TBD	TBD
Batt 2B21 Temp Out of Range Safing Failed-P6	TBD	TBD
Batt 2B21 Undervoltage Safing Failed-P6	TBD	TBD
Batt 2B22 Temp Out of Range Safing Failed-P6	TBD	TBD
Batt 2B22 Undervoltage Safing Failed-P6	TBD	TBD
Batt 2B31 Temp Out of Range Safing Failed-P6	TBD	TBD
Batt 2B31 Undervoltage Safing Failed-P6	TBD	TBD
Batt 2B32 Temp Out of Range Safing Failed-P6	TBD	TBD
Batt 2B32 Undervoltage Safing Failed-P6	TBD	TBD
Batt 4B11 Temp Out of Range Safing Failed-P6	TBD	TBD
Batt 4B11 Undervoltage Safing Failed-P6	TBD	TBD
Batt 4B12 Temp Out of Range Safing Failed-P6	TBD	TBD
Batt 4B12 Undervoltage Safing Failed-P6	TBD	TBD
Batt 4B21 Temp Out of Range Safing Failed-P6	TBD	TBD
Batt 4B21 Undervoltage Safing Failed-P6	TBD	TBD
Batt 4B22 Temp Out of Range Safing Failed-P6	TBD	TBD
Batt 4B22 Undervoltage Safing Failed-P6	TBD	TBD
Batt 4B31 Temp Out of Range Safing Failed-P6	TBD	TBD
Batt 4B31 Undervoltage Safing Failed-P6	TBD	TBD
Batt 4B32 Temp Out of Range Safing Failed-P6	TBD	TBD
Batt 4B32 Undervoltage Safing Failed-P6	TBD	TBD
BCDU 2B1 Overtemp Safing Failed-P6	TBD	TBD
BCDU 2B1 OverTemp-P6	TBD	TBD
BCDU 2B2 Overtemp Safing Failed-P6	TBD	TBD
BCDU 2B2 OverTemp-P6	TBD	TBD
BCDU 2B3 Overtemp Safing Failed-P6	TBD	TBD
BCDU 2B3 OverTemp-P6	TBD	TBD
BCDU 4B1 Overtemp Safing Failed-P6	TBD	TBD

WARNING MESSAGE TABLE (Cont)

Message Text	Condition	Action
BCDU 4B1 OverTemp-P6	TBD	TBD
BCDU 4B2 Overtemp Safing Failed-P6	TBD	TBD
BCDU 4B2 OverTemp-P6	TBD	TBD
BCDU 4B3 Overtemp Safing Failed-P6	TBD	TBD
BCDU 4B3 OverTemp-P6	TBD	TBD
BGA 2B Overtemp-P6	TBD	TBD
BGA 2B Trip-P6	TBD	TBD
BGA 4B Overtemp-P6	TBD	TBD
BGA 4B Trip-P6	TBD	TBD
BMRRM 2B Motor Overcurrent	TBD	TBD
BMRRM 2B Motor Overtemp-P6	TBD	TBD
BMRRM 2B Motor Persistent Current Safing Failed-P6	TBD	TBD
BMRRM 2B Motor Stalled-P6	TBD	TBD
BMRRM 2B Motor Velocity Exceedance Safing Failed-P6	TBD	TBD
BMRRM 2B Motor Velocity Exceedance-P6	TBD	TBD
BMRRM 2B Trip-P6	TBD	TBD
BMRRM 4B Motor Overcurrent	TBD	TBD
BMRRM 4B Motor Overtemp-P6	TBD	TBD
BMRRM 4B Motor Persistent Current Safing Failed-P6	TBD	TBD
BMRRM 4B Motor Stalled-P6	TBD	TBD
BMRRM 4B Motor Velocity Exceedance Safing Failed-P6	TBD	TBD
BMRRM 4B Motor Velocity Exceedance-P6	TBD	TBD
BMRRM 4B Trip-P6	TBD	TBD
Cabin Fan Fail - Node 1	TBD	TBD
Cabin Press Hi - FGB	TBD	TBD
Cabin Press Hi - Node 1	TBD	TBD
Cabin Press Low - FGB	TBD	TBD
Cabin Press Low - Node 1	TBD	TBD
DCSU 2B RBI 6 Overcurrent Safing Failed-P6	TBD	TBD
DCSU 2B RBI 6 OverCurrent-P6	TBD	TBD
DCSU 2B SCA Trip-P6	TBD	TBD
DCSU 4B RBI 6 Overcurrent Safing Failed-P6	TBD	TBD

WARNING MESSAGE TABLE (Cont)

Message Text	Condition	Action
DCSU 4B RBI 6 OverCurrent-P6	TBD	TBD
DCSU 4B SCA Trip-P6	TBD	TBD
DDCU 2B Overtemp Safing Failed-P6	TBD	TBD
DDCU 2B Overtemp-P6	TBD	TBD
DDCU 2B Overvoltage Safing Failed-P6	TBD	TBD
DDCU 2B OverVoltage-P6	TBD	TBD
DDCU 4B Overtemp Safing Failed-P6	TBD	TBD
DDCU 4B Overtemp-P6	TBD	TBD
DDCU 4B Overvoltage Safing Failed-P6	TBD	TBD
DDCU 4B OverVoltage-P6	TBD	TBD
ECU BGA 2B Overtemp Safing Failed-P6	TBD	TBD
ECU BGA 4B Overtemp Safing Failed-P6	TBD	TBD
Fire - Smoke Detector Status - FGB	TBD	TBD
Lab Low T Loop{MTL} IFHX NH# In Temp Low-bypass Failed - Lab	TBD	TBD
Low T Loop{MTL} IFHX NH# In Temp Low-bypass Failed - Lab	TBD	TBD
PFCS 2B Flow Control Valve Failure - Temp High-P6	TBD	TBD
PFCS 2B Fluid Leak-P6	TBD	TBD
PFCS 2B Loss of Comm-P6	TBD	TBD
PFCS 2B Max Outlet Temp Violation-P6	TBD	TBD
PFCS 2B Maximum Outlet Temp Safing Failed-P6	TBD	TBD
PFCS 2B Min Inlet Temp Violation-P6	TBD	TBD
PFCS 2B Minimum Inlet Temp Safing Failed-P6	TBD	TBD
PFCS 2B Pump Switchover Failed-P6	TBD	TBD
PFCS 4B Flow Control Valve Failure - Temp High-P6	TBD	TBD
PFCS 4B Fluid Leak-P6	TBD	TBD
PFCS 4B Loss of Comm-P6	TBD	TBD
PFCS 4B Max Outlet Temp Violation-P6	TBD	TBD
PFCS 4B Maximum Outlet Temp Safing Failed-P6	TBD	TBD
PFCS 4B Min Inlet Temp Violation-P6	TBD	TBD
PFCS 4B Minimum Inlet Temp Safing Failed-P6	TBD	TBD
PFCS 4B Pump Switchover Failed-P6	TBD	TBD
PV CWAI PSN 1 EEATCS PFCS Max Outlet Temp Violation Condition	TBD	TBD

WARNING MESSAGE TABLE (Cont)

Message Text	Condition	Action
PV CWAI PSN 1 EEATCS PFCS Min Inlet Temp Violation Condition	TBD	TBD
PV CWAI PSN 2 EEATCS PFCS Max Outlet Temp Violation Condition	TBD	TBD
PV CWAI PSN 2 EEATCS PFCS Min Inlet Temp Violation Condition	TBD	TBD
PV2B EEATCS FDIR Failure-Heaters Not Off	TBD	TBD
PV2B EEATCS FDIR Failure-Pumps Not Off	TBD	TBD
PV2B EEATCS PFCS FCV Recal Failure	TBD	TBD
PV2B EEATCS PFCS Fluid Leak Condition	TBD	TBD
PV2B EEATCS PFCS Loss of Comm	TBD	TBD
PV2B EEATCS PFCS Min Outlet Temp Violation	TBD	TBD
PV2B EEATCS PFCS ORU Failure	TBD	TBD
PV2B EEATCS PFCS Outlet Temp Invalid Data Condition	TBD	TBD
PV2B EEATCS Pump Switchover Failed	TBD	TBD
PV4B EEATCS FDIR Failure-Heaters Not Off	TBD	TBD
PV4B EEATCS FDIR Failure-Pumps Not Off	TBD	TBD
PV4B EEATCS PFCS FCV Recal Failure	TBD	TBD
PV4B EEATCS PFCS Fluid Leak Condition	TBD	TBD
PV4B EEATCS PFCS Loss of Comm	TBD	TBD
PV4B EEATCS PFCS Min Outlet Temp Violation	TBD	TBD
PV4B EEATCS PFCS ORU Failure	TBD	TBD
PV4B EEATCS PFCS Outlet Temp Invalid Data Condition	TBD	TBD
PV4B EEATCS Pump Switchover Failed	TBD	TBD
SSU 2B Overtemp Safing Failed-P6	TBD	TBD
SSU 2B OverTemp-P6	TBD	TBD
SSU 2B Trip-P6	TBD	TBD
SSU 4B Overtemp Safing Failed-P6	TBD	TBD
SSU 4B OverTemp-P6	TBD	TBD
SSU 4B Trip-P6	TBD	TBD

ECLSS

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TOXIC SPILL RESPONSE	TBD

ECLSS

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NODE 1 FIRE RESPONSE

NOTE

This procedure best performed with three crewmembers.

VISUAL FIRE/SMOKE, OR RCV FIRE - SMOKE DETECTOR 1(2) - NODE 1

If rcv FIRE - Smoke Detector 1(2) - NODE 1, and Smoke Detector 1(2) Active BIT Fail - NODE 1, or Smoke Detector 1(2) Passive BIT Fail - NODE 1

1. Confirm fire (one of following).

√Node 1 for visual fire/smoke
√Other Cabin SD

FIRE DISPLAY

FIRE DISPLAY

'Node 1' (upper left)

√Other Node 1 SD Sctr ↑

2. If no smoke, perform SMOKE DETR MAL, all (SODF: TBD).

3. Don PBA or E1 E-1

WARNING

Do NOT Use PBA O2 Ports (No O2 until 7A).

- SC1 PCS 4. Check Auto Response

FIRE: FIRE ISOL DETAILS

FIRE ISOL DETAILS

'Node 1' (far left)

√Node 1 Cab Fan spd - 0 rpm
√MDM Node 1-1 IMV Isol State - Isol
1-2 IMV Isol State - Isol

If crew detected event

sel Cabin Fan

'State'

cmd Off Execute

cmd Off Cfrm Execute

√Spd - 0 rpm

FIRE ISOL DETAILS

'Node 1'

sel Isolation

'IMV Isolation Status'

cmd Isolation Arm **Execute**
cmd Isolation Confirm **Execute**
Wait 25 seconds.
√MDM Node 1-1 IMV Isol State - Isol
1-2 IMV Isol State - Isol

5. Unpower Non-Critical Node 1 Hardware

PCS

FIRE ISOL DETAILS

'Node 1'(far left)

sel Power Isolation
sel Load Shed (upper left)

'Load Shed Status'

cmd Activate **Execute**
√Status - Activated

NOTE

1. Expect Alarms during Load Shed.
2. Load Shed will take up to 3 minutes to complete.

6. Review RPC Trip and C&W Data

PCS Fire Display: Fire Isol Details: Node 1 Power Isolation

NODE 1 POWER ISOLATION

'RPCM Trips'

√RPCM Trip States (12) - blank

If RPCM Trip State - X
sel RPCM
√tripped RPC Pos - Op
Inform SC2, SC3 of trip and device attached to the RPC.

C&W SUMMARY

Inform SC2, SC3 of any new failures.

ON SC2 OR SC3 CALL, "PERFORM PASS-THRU POWER ISOLATION"

7. Isolate Pass-Thru Power Lines

CAUTION

The following actions may trigger an SM or FGB Load Shed.

PCS

Fire: Fire Isol Details: Node 1 Power Isolation

NODE 1 POWER ISOLATION

sel Pass-thru Power Isol
√RACU 1(2) Status - Off

'ARCU'

cmd Z14B-A RPC 1 Op Inh Off Execute
cmd Z14B-A RPC 1 Op Execute
√Status - Open
cmd Z13B-A RPC 1 Op Inh Off Execute
cmd Z13B-A RPC 1 Op Execute
√Status - Open
cmd Z14B-A RPC 3 Op Inh Off Execute
cmd Z14B-A RPC 3 Op Execute
√Status - Open
cmd Z13B-A RPC 3 Op Inh Off Execute
cmd Z13B-A RPC 3 Op Execute
√Status - Open

ON SC2 OR SC3 CALL, "EVACUATING NODE 1"

8. Isolate Remaining Node 1 Power

PCS

Fire Display: Fire Isol Details: Node 1 Power Isolation: Pass-Thru Power Isolation

NODE 1 PASS-THRU POWER ISOLATION

'Node 1'

cmd DDCU Z14B Converter Off Arm Execute
cmd DDCU Z14B Converter Off Execute
√Output Voltage < 10V
cmd DDCU Z13B Converter Off Arm Execute
cmd DDCU Z13B Converter Off Execute
√Output Voltage < 10V

9. Go to step 21.

SC2,3

10. Obtain CO2 PFE, CSA-CP (SM loc. TBD) and enter Node 1.

11. Activate CSA-CP (press MODE button).

Attach sample pump and sample cabin atmosphere.

WARNING

Continue wearing masks if any of the following are present

1. CO > 10 ppm
2. HCN > XX ppm
3. HCl > XX ppm
4. O₂ < XX.X %

12. Sample fireports in vicinity of fire and record measurements. Unpower loads behind fireports with elevated CO, HCN or HCL levels (coordinate with SC1).

NOTE

1. Sample each fireport for 60 seconds.
2. Sample cabin atmosphere between fireport samples for 60 seconds to clear sensors.

If fire location unknown, sample fireports in the following order

Order #	Fireport	Loads
1	NOD1O1-1	RPDA N1RS1, RPDA N14B
2	NOD1D1-3	RPDA N13B
3	NOD1D1-2	RPDA N1RS2
4	NOD1SD4-1	UOP 1
5	NOD1PD4-1	UOP 2
6	NOD1OP3-1	LT INT NOD1OP4
7	NOD1OS3-1	LT INT NOD1OS4
8	NOD1P3-1	CABIN FAN
9	NOD1P4-3	AFT PORT IMV FAN
10	NOD1P3-2	NODE 1 RAMV
11	NOD1S5-1	AFT STBD IMV VLV
12	NOD1P4-2	AFT PORT IMV VLV
13	NOD1D2-11	DECK FWD IMV VLV
14	NOD1D2-31	DECK AFT IMV VLV
15	NOD1D1-1	EMER LT PS N1 3B4B A
16	NOD1P4-1	EMER LT PS N1 3B4B A
17	NOD1P1-2	SDS VLVS
18	NOD1P2-31	SDS VLVS
19	NOD1P2-11	FWD PORT IMV VLV
20	NOD1S0-1	FWD STBD IMV VLV
21	NOD1S3-1	STBD AFT IMV FAN
22	NOD1P1-3	PORT FWD IMV FAN
23	NOD1S3-31	STBD AFT IMV VLV
24	NOD1S2-11	STBD FWD IMV VLV
25	NOD1P0-1	PORT FWD IMV VLV
26	NOD1P1-1	CUPOLA RAMV

13. Sample suspect fireports for increasing levels of contaminants. If fire persists, inform SC1, "Perform Pass-Through Power Isolation."

14. Sample fireports for increasing levels of contaminants.
If fire persists

WARNING
1. Wear mask during/after discharge.
2. Discharge may be propulsive.

15. Discharge CO2 PFE onto source or into fireport.

NOTE
Discharge will lower combustion product levels behind fireport.

16. Sample fireport for increasing levels of contaminants.
If fire persists
 17. Inform SC1, "Evacuating Node 1."
 18. Close Node 1 Hatches.
 19. Evacuate to Russian Segment.
 20. Sample FGB and SM atmosphere and perform cabin atmosphere cleanup if necessary.
21. Go to NODE 1 POST-FIRE CABIN CLEANUP, all (SODF: TBD).

ISS RAPID DEPRESSURIZATION

- ISS Service
CDR Module
1. EVALUATE RESERVE TIME
√Service module reserve time

Report reserve time to all ISS and STS crew.

ISS Soyuz-
CDR, DM
CM2,
CM3

 2. SOYUZ LEAK CHECK
Soyuz-OM Fwd Hatch → Close
Soyuz-OM Fwd Hatch Equal Vlv → Close

√Soyuz-OM cabin pressure

If Soyuz-OM cabin pressure decreasing
 Soyuz-OM Fwd Hatch Equal Vlv → Open

 Soyuz-OM Fwd Hatch → Open
 Re-ingress SM

 Soyuz-OM Fwd Hatch → Close

 SM-PA Deck Hatch → Close
 SM-PA Deck Hatch Equal Vlv → Close

 Report status to **MCC** and to all crew.
 Await instructions from **MCC**.

If Soyuz-OM cabin pressure not decreasing
 Soyuz not leaking.
 Go to step 3.

Soyuz-
OM

 3. RE INGRESS ISS
Soyuz-OM Fwd Hatch Equal Vlv → Open

Soyuz-OM Fwd Hatch → Open

ISS Service
Crew Module

 4. IMV ISOLATION
√SM reserve time

If SM reserve time ≤ 5 minutes, go to step 12.

cmd IMV Isolate Node 1 Execute

√Node 1 Aft Port IMV Vlv Stat - Isolated
√Node 1 Aft Stbd IMV Vlv Stat - Isolated
√Node 1 Fwd Port IMV Vlv Stat - Isolated
√Node 1 Fwd Stbd IMV Vlv Stat - Isolated

- √Node 1 Deck Fwd IMV Vlv Stat - Isolated
 - √Node 1 Deck Aft IMV Vlv Stat - Isolated
- 5. PMA 3 LEAK CHECK

Node 1

 - Node 1 Deck Hatch → Close
 - √Node 1 Deck Hatch Equal Vlv - Close
 - √SM reserve time
 - √SM cabin pressure

If SM reserve time ≤ 5 minutes, go to step 12.

If SM cabin pressure not decreasing
Leak is in PMA 3.
Go to step 13.
- 6. NODE 1 LEAK CHECK

PMA-1

 - Node 1 Aft Hatch → Close
 - Node 1 Aft Equal Vlv → Close
 - √SM reserve time
 - √SM cabin pressure

If SM reserve time ≤ 5 minutes, go to step 12.

If SM cabin pressure not decreasing
Leak is in Node 1.

 - Node 1 Aft Hatch MPEV → Open
 - Node 1 Aft Hatch → Open
 - Translate to FGB.
 - FGB PA Fwd Hatch → Close
 - √FGB-PA EPV1 - Close
 - √FGB-PA EPV2 - Close
 - √FGB-PA Vest Ctrl Vlv - Close
 - √FGB-PA KBD Vlv - Close

If communication with **MCC** not possible,
Perform NODE 1 LEAK procedure.
Go to step 13.
- 7. PMA 1 LEAK CHECK

FGB-PA

 - FGB-PA Fwd Hatch → Close
 - √FGB-PA EPV1 - Close
 - √FGB-PA EPV2 - Close
 - √FGB-PA Vest Ctrl Vlv - Close
 - √FGB-PA KBD Vlv - Close

✓SM reserve time
✓SM cabin pressure

If SM reserve time \leq 5 minutes, go to step 12.

If SM cabin pressure not decreasing,
Leak is in PMA 1.
Go to step 13.

8. **FGB LEAK CHECK**

SM-PA

FGB-ICC Aft Hatch → Close

✓FGB-ICC Aft Equal Vlvs (two) - Close

✓SM reserve time
✓SM cabin pressure

If SM reserve time \leq 5 minutes, go to step 12.

If SM cabin pressure not decreasing
Leak is in FGB.

cmd FGB-PA EPV1 Op **Execute**
✓FGB-PA Fwd Equal Vlv - Open

cmd FGB-PA EPV2 Op **Execute**
✓FGB-PA Fwd Equal Vlv - Open

Translate to SM-PA

cmd FGB-ICC KBD Vlv Op **Execute**
✓FGB-ICC KBD Vlv - Open

If communication with **MCC** not possible,
Perform FGB LEAK procedure.
Go to step 13.

9. **SM/FGB VESTIBULE CHECK**

SM-PA Fwd Hatch → Close

SM-PA Fwd Equal Vlv → Close

✓SM reserve time
✓SM cabin pressure

If SM reserve time \leq 5 minutes, go to step 12.

If SM cabin pressure not decreasing
Leak is in SM/FGB Vestibule.
Go to step 13.

10. PROGRESS LEAK CHECK

Prog-M Prog N2 Intro Valves (two) → Close

Service Prog Fwd Hatch → Close

Module Prog Fwd Equal Vlv → Close

✓SM reserve time

✓SM cabin pressure

If SM reserve time < 5 minutes, go to step 12.

If SM cabin pressure not decreasing

Leak is in Progress vehicle.

If communication with **MCC** not possible,

Perform PROGRESS LEAK procedure.

Go to step 13.

11. PROGRESS/SERVICE MODULE VESTIBULE LEAK CHECK

SM-ICC Aft Hatch → Close

cmd SM-ICC Aft Equal Vlv Cl **Execute**

✓SM-ICC Aft Equal Vlv - Close

✓SM reserve time

✓SM cabin pressure

If SM reserve time < 5 minutes, go to step 12.

If SM cabin pressure not decreasing

Leak is in Progress/SM vest.

Go to step 13.

If SM cabin pressure decreasing

Leak is in service module.

If communication with **MCC** not possible, perform SM LEAK procedure.

12. EVACUATION SEQUENCE

Go to SOYUZ EMERGENCY DEPARTURE procedure.

13. SAFE LEAKING MODULE OR VESTIBULE

Advise **MCC-H** of status.

Await instructions from **MCC-H**.

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